PATENT
Attorney Docket No. 8124.006.US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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| In re Application of: Vincent B. HO | : | Group Art Unit: 2609 |
| App. No.: 10/686,194 | : | Examiner: Woldemariam, Akililu |
| Filed: October 9, 2003 | : | Confirmation No. 3778 |

Title: PIXELATION RECONSTRUCTION FOR IMAGE RESOLUTION AND IMAGE DATA TRANMISSION

MAIL STOP: AMENDMENT

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

**DECLARATION UNDER 37 C.F.R. § 1.131**

We, Vincent B. Ho, with a residence address at 11908 Castlegate Court, North Bethesda, Maryland 20852, and Micah D. Schmidt, with a residence at 24103 Mountain Cloud, San Antonio, Texas 78258, are co-inventors of the invention disclosed and claimed in the above-captioned patent application.

Prior to September 26, 2001, we conceived and reduced to practice the systems and methods according to the claims of the instant patent application, at least to the extent that such systems and methods are disclosed in U.S. Patent Application No. 6,885,776 (Takakura). Accordingly, Takakura cannot be considered to be prior art to our claimed invention.

In support of this Declaration, attached hereto is a document that was prepared by us prior to September 26, 2001 ("Exhibit A"). As clearly established by this document, we conceived and reduced to practice the systems and methods according to the claims of the instant patent application prior to Takakura, at least to the extent that such systems and methods are alleged to be disclosed in Takakura.

To assist the Examiner in evaluating Exhibit A, the following remarks are provided highlighting certain statements within Exhibit A.

The Examiner stated that Levin does not disclose many aspects of the claimed invention, and for those multiple missing pieces, the Examiner points to Takakura for alleged compensation.

Regarding claim 1, in the first full paragraph of page 3 of the Office Action, the Examiner states that "*Levin does not disclose an overlapping increment, thereby producing a multiplicity of sample layers, the overlapping increment being no larger than the first pixel size thereby determining the second pixel size.*"

Applicant directs the Examiner to Exhibit A which discusses the concept of the invention and in particular as the concept relates to the alleged disclosures of Takakura. For example, on the first page of Exhibit A, we recite the following at the third bullet point indicated:

> *"Begin to sample region V with a cuboidal sample region S of size I in such a way that S just overlaps region V at point ($x_1$, $y_1$, $z_1$) by some value dI - call it sample position (sss)"*

In view of at least this passage, it is believed clear that the alleged disclosures of Takakura have been conceived and reduced to practice by us and prior to the filing date of Takakura.

The above-noted quote from Exhibit A is provided for the convenience of the Examiner only. Other sections of Exhibit A disclose additional elements of our claimed invention and, further, provide a clear context for the invention. Accordingly, we respectfully request that Takakura be removed as a prior art reference.

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the above-identified application or any patent issued thereon.

By: _____ Date February 5, 2008
Name: Vincent B. Ho

By: _____ Date January 31, 2008
Name: Micah D. Schmidt
Attached: Exhibit A

# EXHIBIT A

# REDACTED

## back projection process description

- begin w/ a pt in space P at an unknown location within a region V
  $x_1, y_1, z_1$ to $x_2, y_2, z_2$
- assume the intensity of P is some value $I_p$ and that the intensity of every other point is $\emptyset$.
- Begin to sample region V with a cuboidal sample region S of size $l$ in such a way that S just overlaps region V at point $(x_1, y_1, z_1)$ by some value $dl$
  - call this sample position $(\phi, \phi, \phi)$
- Create a new region C of the size of V with room for a buffer of ~~size~~ size $l - dl$.
- measure the average intensity of the sample region S and asign that value to every point in a corresponding region in C.
  - if S overlaps P then the intensity of $S = I$
    else intensity of $S = 0$
- move sample region S one step $dl$ to a new position along the x axis and repeat.
- continue until the sample region just ovelaps V by $< dl$ then inriments by $dl$ in the y direction across the plane and then in the z direction across region V.

- the algorithm for sampling positions of S would be as follows

$$Xn = \text{number of steps on x axis} = \frac{x_2 - x_1}{dl} + \frac{l}{dl}$$

$$Yn = \frac{y_2 - y_1}{dl} + \frac{l}{dl} \qquad Zn = \frac{z_2 - z_1}{dl} + \frac{l}{dl}$$

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for (z = 0; z <= Zn; z++)
  for (Y = 0; Y <= Yn; Y++)
    for (x = 0; x <= Xn; x++)
      { - sample region S
        - add avg value Intensity Is
          to every corresponding point in C
      }
```

- Take the region C and look at the mapped intensity values.
  - there will be a roughly spherical region within C of non-zero intensity
  - radius of that region will be $l$
  - the intensity value on the edge of that region will be $\overline{I_s} = \frac{I_p}{l^3}$
  - the intensity at the center of that region will be $\overline{I_s}$ · (the number of samples over P)

$$I_{center} = \overline{I_s} \cdot \left(\frac{l}{dl}\right)^3$$

  - the location of the center of that region will correspond to the original point P in region V
  - the intensity of point P can be calculated from

$$I_{center} = \frac{I_p}{l^3} \cdot \frac{l^3}{dl^3} \Rightarrow \frac{I_p}{dl^3} \Rightarrow I_{center}\, dl^3 = I_p$$